Aging & Rehabilitation

An Interdisciplinary Research Seminar Series

UNIVERSITY OF FLORIDA

Sponsors

Department of Veteran Affairs

- Rehabilitation Outcomes Research Center (RORC)
- Brain Rehabilitation Outcomes Research Center (BRRC)
- Geriatric Research, Education, and Clinical Center (GRECC)

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UF McKnight Brain Institute

UF College of Nursing

Schedule

- January 9th, 2006 – May 22nd, 2006
- Mondays, 12:00 – 1:00
- Location: UF HPNP Building, Room G101
- Cyber Seminar:
  - VA RORC Conference Room, Commerce Building Downtown
  - VA BRRC Nursing Home Care Unit Conference Room (first floor)
  - UF Brooks Center Conference Room, Jacksonville (904) 306-8977

Themes

- Basic Science
- Clinical Science
- Outcomes / Health Policy
- Behavioral and Social Research
- Cutting Edge / New Research

Rehabilitation Outcomes Research Center
VA HSR&D and RR&D Center of Excellence

VA, Medicare and Medicaid: Single, Dual and Triple Utilization and Mortality by Veterans with Stroke

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Special acknowledgement

- VA Information Resource Center (VIReC)
  (CMS' Medicare data)

- Fl Agency for Healthcare Adm and
  UFl's Fl Center for Medicaid Issues
  (Fl Medicaid data)

CMS = Centers for Medicare and Medicaid Services
VA = Department of Veterans Affairs
VHA = Veterans Health Administration

Objectives

- VA & non-VA use by veterans w/ stroke
- Demographic & clinic characteristics
- 12-m rehospitalization (any cause)
- 12-m recurrent stroke readmission
- 12-m mortality

Today's presentation

- Background
- Scientific rationale
- Objectives
- Methods
- Results
- Discussion
- Limitations

Findings from a ongoing project

- **VA HSR&D**
- *VA & non-VA rehab use by veterans with stroke (IIR 03-151-1)*
- **07/01/04 – 06/30/06**

HSR&D = VA Health Services Research & Development
IIR = Investigator Initiated Research

Project objectives

1. Patient characteristics
2. Pre-index stroke healthcare utilization
3. Rehabilitation settings and services
4. Out-of-VA rehab utilization
5. Impact on patient outcomes:
    1) 12-M rehospitalization for any cause
    2) 12-M recurrent stroke readmission
    3) 12-M mortality
    4) Index discharge to community

Dual eligibilities among VHA enrollees

- 1989: 22% (National: ≥65)
- 1998: 2/3 (VISN: ≥65)
- 1999: ½ (National: all age)

References:

Fisher ES, et al. Med Care Res Rev. 1995
Fleming C, et al. JAMA. 1992
Barnet MJ, et al. Abstract. 2003
Hynes DM, et al. Abstract. 2003

VISN = Veterans Integrated Service Network

Increasingly more dual users received acute MCI care from Medicare than from VA

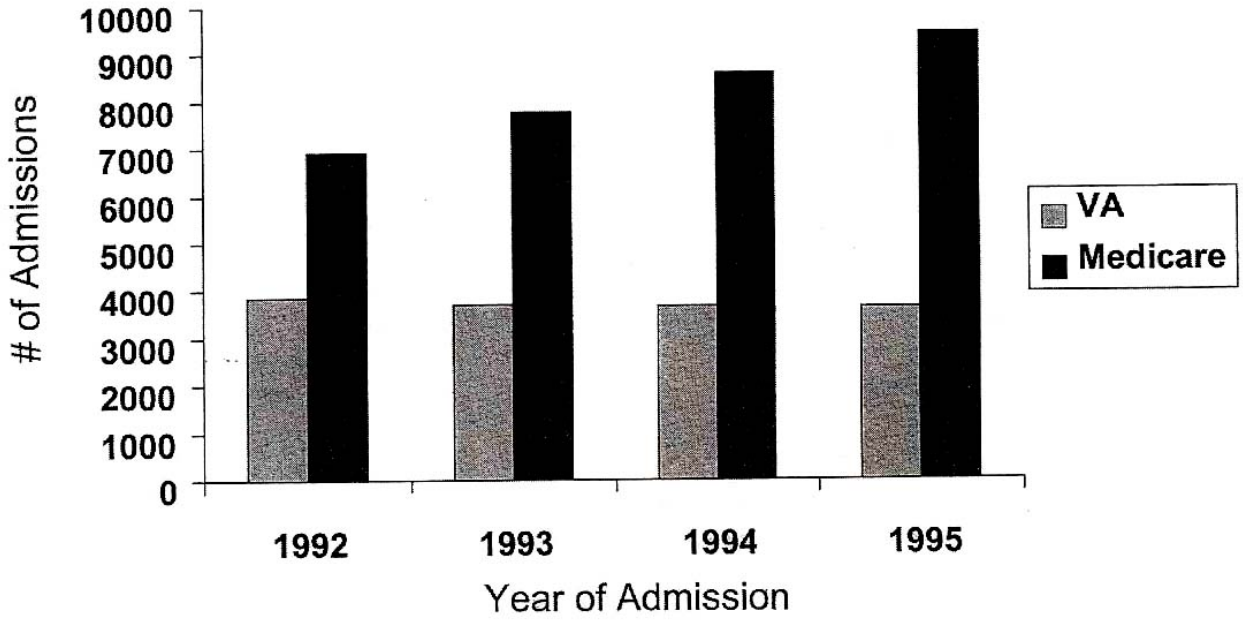


FIG. 1. Number of admissions for AMI by initial system of care by year.

Reference:
Wright MW, et al. Med Care. 1999

MCI = Myocardial Infarction

Dual use: ups & downs

Upside:

- **Flexibility**
- **Accessibility**
- **Satisfaction, etc.**

Downside:

- **Discontinuity**
- **Incomplete med history**
- **Cost shift, etc.**

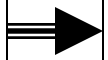
Importance for post-stroke care

Post-stroke Rehab:

- Early
- Consistent
- High-intensity

2ndary Prevention:

- Effective
- Early



- Enhance recovery
- Minimize Fx disability
- Reduce recurrent Risk
- Improve QoL

Less is known about

- VA and non-VA (VA-Medicare, VA-Medicaid, VA-Medicare, Medicaid) healthcare including rehabilitation utilization by veterans with acute stroke

Objective

To assess the likelihood of 12-month:

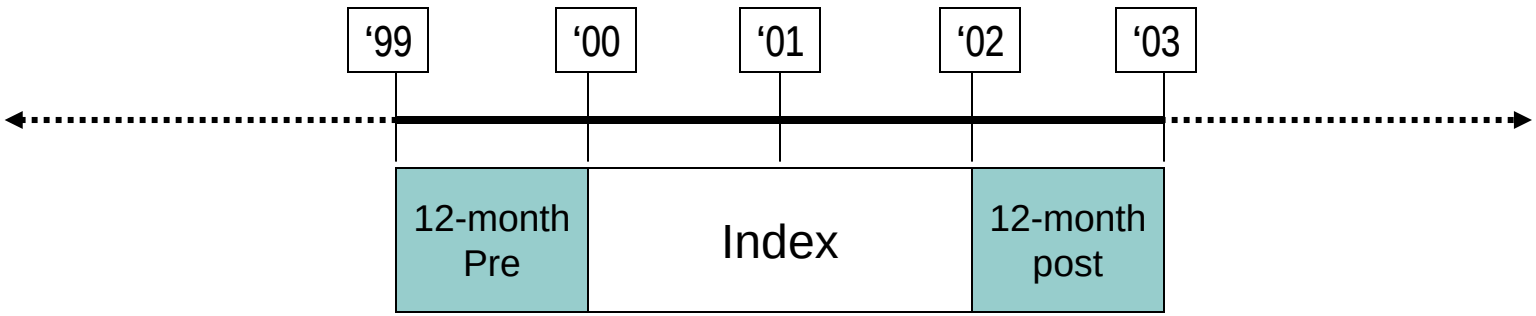
1) *rehospitalization for any cause,*
2) *Recurrent stroke readmission*
3) *Mortality.*

Data used

Source	Demographics	Inpatient	Outpatient
VHA	1) In/outpatient files 2) FSOD 3) BIRLS death file	1) PTF Main 2) FSOD	Outpatient file
Medicare FFS	Denominator	MedPAR	1) Carrier 2) Outpatient SAF
Fl Medicaid	Recipient file	Facility files	

FSOD = VA Functional Status Outcomes Database
BIRLS = Beneficiary Identification & Records Location Subsystem
FFS = Fee-for-Service
MedPAR = Medicare Provider Analysis and Review [data file]
PTF = Patient Treatment File [VA inpatient data files]
SAF = Standard Analytical File

Timeframe by CY



CY = Calendar Year

Sample (N=1,825)

- Lived in Fl between CY00-01
- Inpatient Dx matched H. Sensitivity
- Discharged alive at index
- Index LOS <365 days

Reference:
Reker D, *et al*. **JRRD. 2001**

High Sensitivity vs. High Specificity

Performance Estimates	Algorithm	
	High Sensitivity	High Specificity
Sensitivity	89%	59%
Specificity	57%	84%
Predictive Value Positive	60%	72%
Predictive Value negative	88%	74%

Reference:
Reker D, *et al*. **JRRD. 2001**

Sociodemographics

- Age ≥65 years (yes, no)
- Race (white, all other)
- Gender (male, female)
- Marital status (married, all other)
- Priority for VHA healthcare (high, low)

Reference:
Jia H, *et al*. **JRRD. 2006 (in press).**

Clinical variables

- Index
  - LOS
  - Modified Charlson Comorbid summary score
  - Stroke type (hemorrhagic, ischemic, other)
  - Intubation or mechanical ventilation (yes, no)
  - Atrial fibrillation (yes, no)
  - Dysphagia (yes, no)
  - Malnutrition (yes, no)
- 12-month pre-index
  - Stroke diagnosis (yes, no)
  - Hospitalization use (yes, no)
- 12-month post-index
  - Death (yes, no)

Dependent variables: yes, no

1) Rehospitalization for any cause
2) Recurrent stroke readmission
3) Mortality (including event at index)

Independent vars/user groups

1) **VA only**
2) **VA-Medicare FFS**
3) **VA-FI Medicaid**
4) **VA-Medicare-Medicaid**

Analysis

- Characteristics by user groups
- Multicollinearity diagnostics
- Multivariable logistic regression model for each dependent var (adjusting for all characteristics vars)

Table 1. Demographics by user groups

Characteristics	Sample N=1825	Triple 8%	VA-Medicare 60%	VA-Medicaid 3%	VA only 29%	P*
Age: ≥ 65 years	71.6	79.7	87.3	7.8	42.9	<.0001
White	83.4	74.6	88.1	78.4	76.5	<.0001
Male	96.8	99.3	96.2	100.0	97.3	0.0895
Married	57.8	52.9	64.3	27.5	48.0	<.0001
H. VA priority	86.1	92.8	81.9	92.2	92.7	<.0001

* The p-values were from Chi-square tests between different user groups.

Table 2. Clin. characteristics by user groups

Characteristics:	Sample	Triple	VA-Medicare	VA-Medicaid	VA only	P*
Index LOS	18.9±33.1	21.7±28.1	17.6±32.0	26.6±36.7	20.2±35.8	0.0969
Comorbidity	*1.0±1.2*	*1.2±1.4*	*1.0±1.2*	*0.5±1.1*	*0.9±1.2*	*0.0055*
Hemorrhagic	*8.4*	*4.4*	*8.0*	*15.7*	*9.8*	*0.0022*
Ischemic stroke	71.7	71.0	74.0	51.0	68.9	
H. specificity: yes	50.9	45.7	51.8	51.0	50.5	0.5954
Provider type: AC	*69.8*	*65.2*	*74.0*	*66.7*	*62.3*	*<.0001*
Intubation: yes	2.1	2.9	1.9	3.9	2.1	0.6877
A.F: yes	*12.3*	*11.6*	*15.1*	*0.0*	*7.7*	*<.0001*
Dysphagia: yes	6.4	5.8	7.2	3.9	5.1	0.3632
Malnutrition: yes	*0.7*	*2.2*	*0.6*	*2.0*	*0.2*	*0.0464*
Prior hospitalization	*1.4±1.9*	*2.7±3.6*	*1.6±1.7*	*1.6±1.8*	*0.7±1.4*	*<.0001*
Stroke: yes	42.4	42.0	41.2	31.4	46.1	0.0994
Post Death: yes	*11.7*	*13.0*	*13.9*	*11.8*	*7.0*	*0.0008*

* The p-values were from Chi-square tests for categorical vars and F-test for continuous vars between different user groups.

12-month post-index rehab use

Care Source	User Group (N=1,825)				
	Triple (n=138)	VA-Medicare (n=1105)	VA-Medicaid (n= 51)	VA-only (n= 531)	Total
VHA only	17	288	39	367	711 (47%)
Medicare only	49	386	n/a	n/a	435 (29%)
VA & Medicare	61	313	n/a	n/a	374 (24%)
Total *	127(92%)	987(89%)	39(76%)	367(69%)	*1,520 (83%)*
No rehab.	11	118	12	164	*305 (17%)*

* $P<.0001$.

What about the types?

Table 3. Logistic regression coefficients for 12-M rehospitalization (N=1,825)

Factors	Any Cause		Recurrent Stroke	
	AOR	95% C.I.	AOR	95% C.I.
User group: Triple	14.5	6.6-32.1†	5.6	3.5-8.8†
VHA-Medicare	1.5	1.2-2.0‡	3.2	2.3-4.4†
VHA-Medicaid	2.0	1.1-3.9‡	3.0	1.6-5.9‡
Comorbidity	1.1	1.0-1.2‡	1.0	0.9-1.1
High Specificity: Yes	1.1	0.8-1.3	1.3	1.1-1.7‡
Prior hospitalization	1.2	1.1-1.3†	1.1	1.0-1.1‡
Provider type: Long-term care	1.1	0.8-1.5	0.5	0.3-0.7†
Prior stroke: Yes	0.8	0.6-0.9‡	1.0	0.8-1.2
Intubation: Yes	1.5	0.7-3.4	2.3	1.2-4.9‡
Dysphagia: Yes	1.0	0.6-1.4	1.7	1.1-2.6‡
Malnutrition: Yes	1.8	0.4-9.0	5.0	1.4-19.8‡
Death: Yes	2.1	1.5-3.0†	1.1	0.8-1.6
c statistic	0.7		0.7	
Max-rescaled R^2	0.2		0.2	

†*P* value <.0001; ‡*P* value <0.05.

Table 4. Logistic regression coefficients for 12-month mortality (N=1,953)

Factors	AOR	95% C.I.
User group: Triple	0.7	0.4-1.3
VHA-Medicare	1.2	0.9-1.7
VHA-Medicaid	1.7	0.7-4.2
Age: ≥65 years	2.0	1.4-3.0‡
VA care priority: High	1.8	1.2-2.7‡
Comorbidity	1.4	1.3-1.5†
Prior hospitalization	1.1	1.0-1.2‡
Intubation: Yes	10.6	6.1-18.3†
c statistic	0.7	
Max-rescaled R^2	0.2	

†*P* value <.0001; ‡*P* value <0.05.

Higher % of non-VHA users among stroke patients

Previous report

- **73% VHA enrollees had multiple coverage (VHA, Medicare, Medicaid).**

Our findings

- **70% of the sample had used services under the 3 programs.**
- **Post-stroke care: who have received what from where?**

Reference:
Shen *et al*. **Med Care Res Rev. 00**

The user groups are different

Sociodemographically,

- VHA-Medicare users are more likely to be:
  - Older
  - White
  - Married
  - Of low priority for VHA care

Reference:
Jia H, *et al*. Fed Practitioner. 2006 (in press)

The user groups are different

Clinically,

- VHA-Medicare users are more likely to be:
  - Diagnosed with ischemic stroke and AF
  - Acute care users at index
  - Higher in mortality 12 months post-stroke.

VA-Medicare users' characteristics consistent with reports

- **Age is a key risk factor for AF development**
- **AF is a major cause of increasing ischemic stroke, inpatient care, and death**

References:
Benjamin EJ, *et al*. JAMA. 1994;
Lloyd-Jones DM, *et al*. Circulation, 2004;
Wolf PA, *et al*. Stroke. 1991;
Benjamin EJ, *et al*. Circulation. 1998.
Psaty BM, *et al*. Circulation. 1997;
Stewart S, *et al*. Am J Med. 2002;
Hart RG, *et al*. Ann Intern Med 2003

Utilization

- Increased healthcare eligibility for the veterans with stroke in Florida is associated with adjusted
  - rehospitalization in general
  - recurrent stroke readmission

Mortality

- No differences in 12-month adjusted mortality between VA-only and other user groups

Generalizability is limited by

- **Florida state only instead of national**
- **Inclusion criteria (↑ size ↓ accuracy)**
- **Small sample size for triple and VA-Medicare arms, etc.**

Limitations

- Are these differences in likelihood reflect differences in quality of care, access to care, or patient clinical characteristics?
  - A critical issue for VHA healthcare
  - The subject of on-going research
- Future research is necessary to understand:
  - Outcomes of different user groups
  - Factors such as accessibility
  - Scope of services provided by each system
  - Patient satisfaction
  - Patient preference and choices, etc.

Thank You!

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Happy Chinese New Year of the Dog!